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Ref. No. 1875274.01/015435.00010

April 19, 2019

(VIA US MAIL AND EMAIL)

Michelle Mullin, Project Manager
USEPA REGION 10
1200 Sixth Avenue
Mail Code: OAW-150
Seattle, WA 98101
Mullin.michelle@epamail.epa.gov

**Re: Request for Modification to 12-18-2013 Risk Based Disposal Approval
Supplement to Rainier Commons Phase I Close-Out Report**

Dear Ms. Mullin,

As you know we represent Rainier Commons LLC. We write to provide substrate sampling documentation as a supplement to the Rainier Commons' Phase I Close-Out Report and in support of Rainier Commons' formal request to remove concrete and sandstone substrates from the Condition 8 requirements of the RBDA.

Enclosed please find two substrate sampling reports from NVL Labs, Inc., dated April 19, 2019. The first report addresses the concrete substrate. The second report addresses the sandstone substrate in the Phase I work areas. The sampling was performed following all Phase I paint removal work and full visual clearance. The sampling took into account and consideration all of the available concrete and sandstone areas. A grid system was applied to all of the Phase I concrete and sandstone areas. A random number generator was utilized to select the sampled locations. Three primary samples of each substrate type were collected along with a field duplicate and a split sample. The processes and procedures are detailed in the enclosed reports ensuring representative, quality controlled samples and results.

The sample results demonstrate three things:

- 1) The sample results demonstrate the effectiveness of the paint removal process in the general Work Plan;
- 2) The sample results further demonstrate that the PCBs in the dried applied paint did not migrate into the substrate; and

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- 3) The sample results further demonstrate the reliability of the visual clearance protocol to clear and approve the work for unrestricted use, without the need for additional substrate sampling, or other work.

Condition 8 of the EPA's December 18, 2013 Risk Based Disposal Approval ("RBDA") provides as follows:

8) Rainier shall collect verification samples of concrete and any other substrate type not analyzed as part of the September 2011 RBDA (Enclosure 1, Reference 2) demonstration project [which removed brick and mortar from further need of substrate testing] once the visual standard for paint removal is met. Rainier shall use the grid system established in Condition 7 and collect a minimum of three samples per substrate, per phase of removal activity covered by the IPWP. As part of the IPWPs, Rainier shall devise a detailed sampling plan that will ensure that the data collected are representative of the PCBs that may remain in the substrate, and include an analysis of the representativeness in their sampling plan. The sampling plan shall also include sample collection methods, sample locations, and QA/QC. Sampling shall follow the guidelines provided in the EPA document titled 'Standard Operating Procedure For Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs)', revised May 5, 2011 (SOP). The most recent version can be found here:

<http://www.epa.gov/region1/cleanup/pcbs/pdfs/484692.pdf>.

Data shall be sufficient for EPA to conclude that the visual performance standard is adequate to verify both removal of PCB bulk product waste and that no further cleanup is likely to be required for the remaining substrate to satisfy the performance criteria of 40 C.F.R. 761.61(c) and 761.62(c) of no unreasonable risk of injury to health or the environment. If results of the sampling represent that the substrate presents no unreasonable risk of injury to health or the environment, Rainier may request a modification of this approval to eliminate the substrate sampling requirements.

Rainier Commons is submitting these substrate reports as a supplement to its Phase I Close-Out Report. The sampling plan, selection of locations, collection of samples, care, custody and transport of samples, laboratory analysis and reporting on the data was all conducted by NVL Labs. All of the sample results are below 1 ppm, which has been determined by EPA to be protective of human health and the environment and is consistent with unrestricted use. We trust this documentation will fulfill the final set of data required by EPA for full and final approval of the Phase I Close-Out Report.

In addition, the data provides the basis to remove the two additional substrate types, both concrete and sandstone, from further testing in future phases of work. Pursuant to the provision in Condition 8 of the RBDA set forth above, Rainier Commons formally requests the modification of Condition 8 of the RBDA adding Sandstone and Concrete to the Brick/Mortar substrate, which was previously cleared in 2011, to the list

of approved substrates, such that no further substrate testing will be required for these three substrate types.

We appreciate your immediate time and attention to this matter.

Very truly yours,

RYAN, SWANSON & CLEVELAND, PLLC



Jo M. Flannery
Attorney Of Counsel

JMF:raw

Enclosures

cc: Lynne D. Davies (via email - Davies.Lynne@Epamail.epa.gov)
Lisa McArthur - Manager, RCRA Corrective Action, Permits and PCB Unit (via email - mcarthur.lisa@epa.gov)
Dave Leonard, NVL
Phil Roberts
Client

April 19, 2019

Shimon Mizrahi
Rainier Commons LLC
918 S. Horton Street, Suite 1018
Seattle, WA 98134

Subject: Polychlorinated Biphenyl (PCB) Substrate Testing
CONCRETE - POST VISUAL CLEARANCE

Site Address: Rainier Commons, LLC
3100 Airport Way S, Seattle, WA

NVL Project#: 2012-494

Dear Mr. Mizrahi:

Per your request, NVL Laboratories Inc. (NVL) tested concrete substrate, following final visual clearance and approval of paint removal work, for the presence of Polychlorinated Biphenyls (PCBs), at the Rainier Commons site per the conditions for such testing pursuant to Condition 8 of the EPA's December 18, 2013 Risk Based Disposal Approval for Rainier Commons. The purpose being to collect and provide data sufficient for the EPA to conclude that the visual performance standard is adequate to verify both removal of the PCB bulk waste and that when the visual clearance performance standard is met no further clean-up is likely required of the remaining substrate, with any remaining detectable levels of PCBs registering below the threshold for unrestricted use.

EXECUTIVE SUMMARY

Utilizing the "Sample Location Selection" process delineated in the *Rainier Sampling Plan for Verification of Concrete Substrate Once Visual Clearance Standard Met* (the *NVL Substrate Sampling Plan*), NVL randomly selected representative locations of the concrete substrate. These randomly selected locations were then tested for the presence of PCBs after all paint abatement work was completed and after all work areas were cleared utilizing the visual clearance performance standard and procedures.

Laboratory analysis of the concrete substrate did not detect the presence of PCBs with a Reporting Limit of less than 1 ppm. The results confirm that the visual clearance standards already approved for brick and mortar are also effective for concrete substrates. The results further confirm that PCBs contained in the historical layers of paint applied to the concrete did not migrate into the concrete substrate. These findings meet the requirements of Condition 8 of the EPA's Risk Based Disposal Approval (RBDA) for Rainier Commons.

Based on the findings, it is recommended that Rainier Commons request modification to the RBDA to eliminate concrete substrate sampling requirements, effective upon the completion of the Phase I work.

BACKGROUND

Condition 8 of the EPA's Risk Based Disposal Approval for Rainier Commons (RBDA) requires

testing of each type of substrate, from which historical layers of paint have been removed, to determine if PCBs contained in the paint migrated into the substrate, or remain at greater than 1 ppm following visual clearance pursuant to the visual clearance performance standards applicable to the work as set forth in Condition 7 of the RBDA and Exhibit 12 of the Phase I Individual Phased Work Plan (Phase I IPWP). Substrate test results confirm whether or not the visual clearance performance standard is sufficient to clear that particular type of substrate and can be relied upon, without further additional destructive substrate testing, to clear that particular type of substrate for unrestricted use. That is to say the substrate does not contain PCBs greater than 1 ppm.

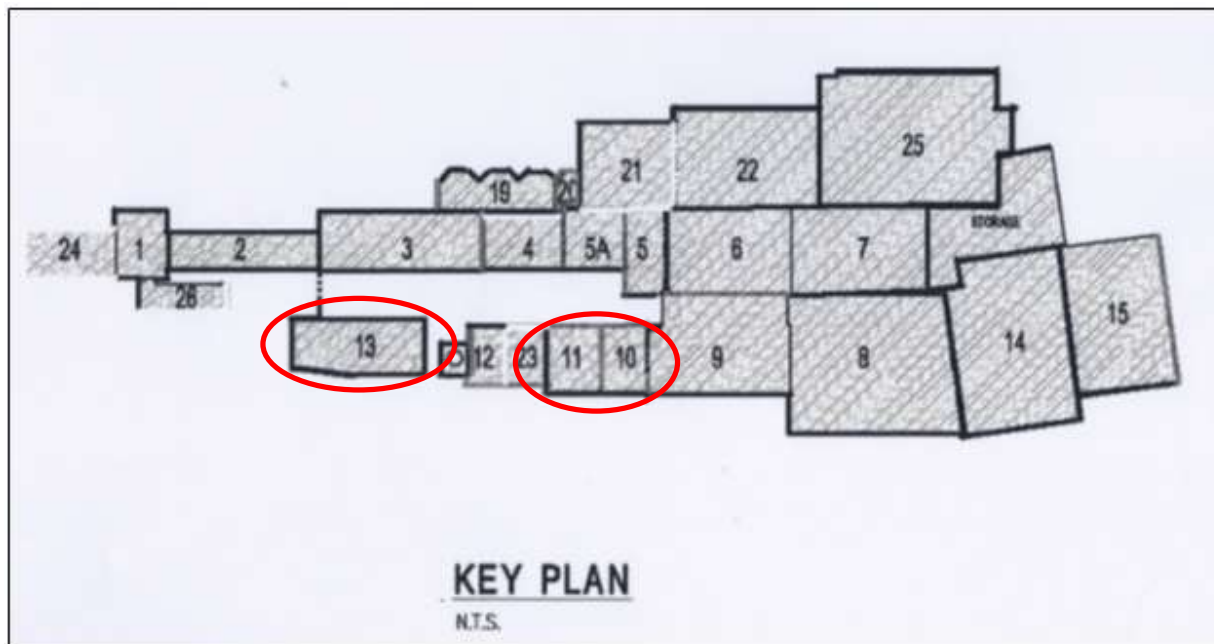
The approved NVL *Substrate Sampling Plan* requires that a Certified Industrial Hygienist (CIH) oversee all sample collection, analysis, data interpretation and reporting with regards to substrate testing. After reviewing results for samples collected to date during the Phase I work on Buildings 10, 11 and 13, it became apparent that a CIH had not been involved in all aspects of all sample planning and collection events. The purpose of some Phase I samples previously collected was to assess abatement techniques and later collected samples were initially intended to serve as post-clearance samples. The timing of work performed, sample collection, punchlist work and the vernacular of “pre-clearance” and “post-clearance” samples apparently caused some confusion upon initial review of NVL’s reporting on the laboratory results for these previously collected samples. Additionally, due to the piece meal approach in the initial series of sample collection events, the Field QA/QC procedures described in the NVL sampling plan were not adequately addressed. Given this, Rainier Commons determined to initiate the collection of a new concrete substrate sample set, commissioning NVL’s CIH to prepare the sampling plan, oversee all sample location identification, collection, analysis, data interpretation and reporting, including all field QA/QC requirements. The body of this report provides the details of the concrete substrate sampling that was performed March 11, 2019 in response to this request.

Earlier sampling events – not included in this report but previously reported upon to EPA - and their purpose included the following:

- Rainier Commons requested the collection and analysis of concrete substrate samples from Building 13 on August 4, 2014 and Buildings 11 and 13 on September 29, 2014, prior to the visual clearance of the Phase I work, to measure the efficacy of initial sandblasting efforts. These informational pre-clearance samples were used to better understand the performance of the initial sandblasting techniques employed at that time and were not intended as “clearance” samples.
- On December 1, 2014 a concrete substrate sample was obtained by NVL Laboratory personnel for the purpose of addressing Condition 8 of the RBDA. Post clearance samples were also obtained in January 2015, July 2018, and September 2018. The field samples were obtained utilizing the “Sample Collection” section of the approved NVL *Substrate Sampling Plan*.
- During a subsequent desk review of the EPA SOP for Sampling Porous Surfaces for PCBs, it was noted that the document requires that the sampled area be cleaned with a clean brush or cloth prior to drilling (Section 9.1.1). This procedural step had been omitted in the NVL Substrate Sampling Plan. No specific annotation regarding proper sample site preparation was included in the field notes, therefore, it was concluded that areas where previous testing had identified the slight presence of PCBs, additional substrate sampling was warranted to ensure the required preparation step in the EPA SOP was performed.

SITE MAP

The circled area on this site map shows the locations of buildings 10, 11 and 13 at Rainier Commons.



METHOD

Field collection and subsequent laboratory analysis was performed in accordance with the NVL *Substrate Sampling Plan* (Exhibit 11 to Phase 1 IPWP), revised to include and match the EPA SOP. All concrete surfaces identified during the abatement process were equally included in the sample site selection process, making the three samples randomly selected fully representative of the total available sample population.

Details in NVL's *Substrate Sampling Plan* included:

- Having a Certified Industrial Hygienist (CIH) overseeing all sample collection, analysis, data interpretation and reporting involved with this assessment
- Specific procedures to randomly select sample testing locations
- Specific protocol for identifying the samples
- Specific instructions for sample collection
- Field QA/QC procedures, which included collecting field duplicate and split samples
- Specific requirements for the laboratories selected for sample analysis

The laboratories selected for sample analysis were:

- NVL Laboratories, Inc.
- Fremont Analytical Inc.

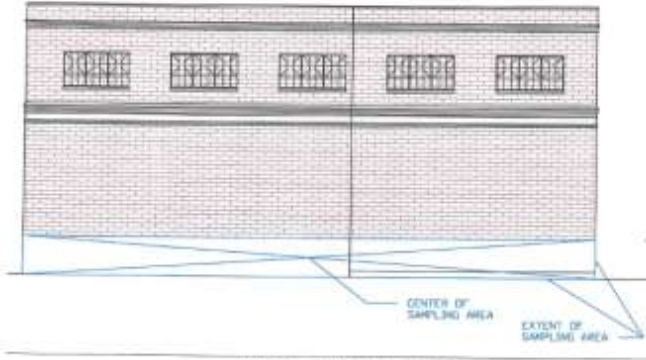
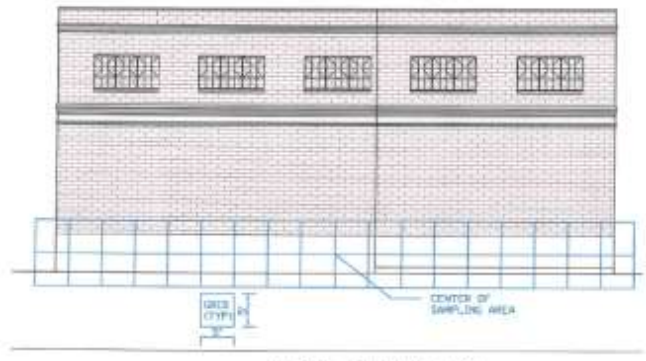
Both are accredited laboratories for analysis for PCB Aroclor content via EPA Method 8082. A Reporting Limit of less than 1 ppm was requested at the time of sample submission consistent with the requirements of the RBDA and unrestricted use.

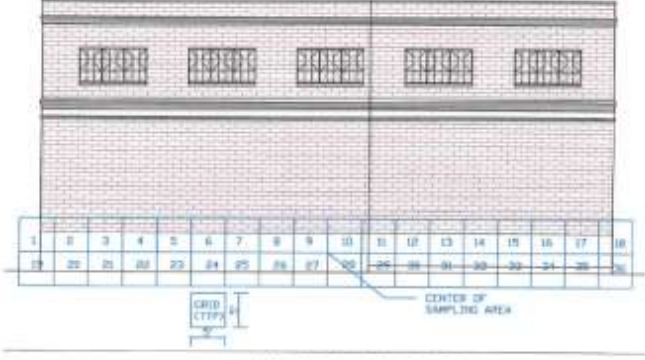
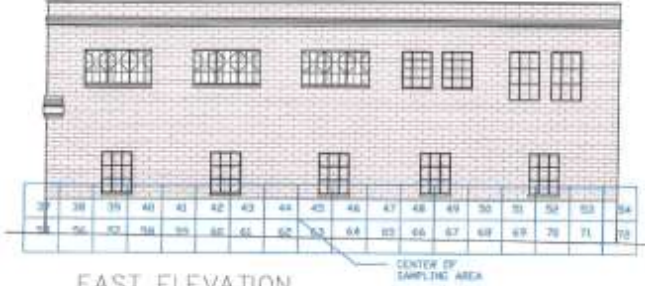

TESTING

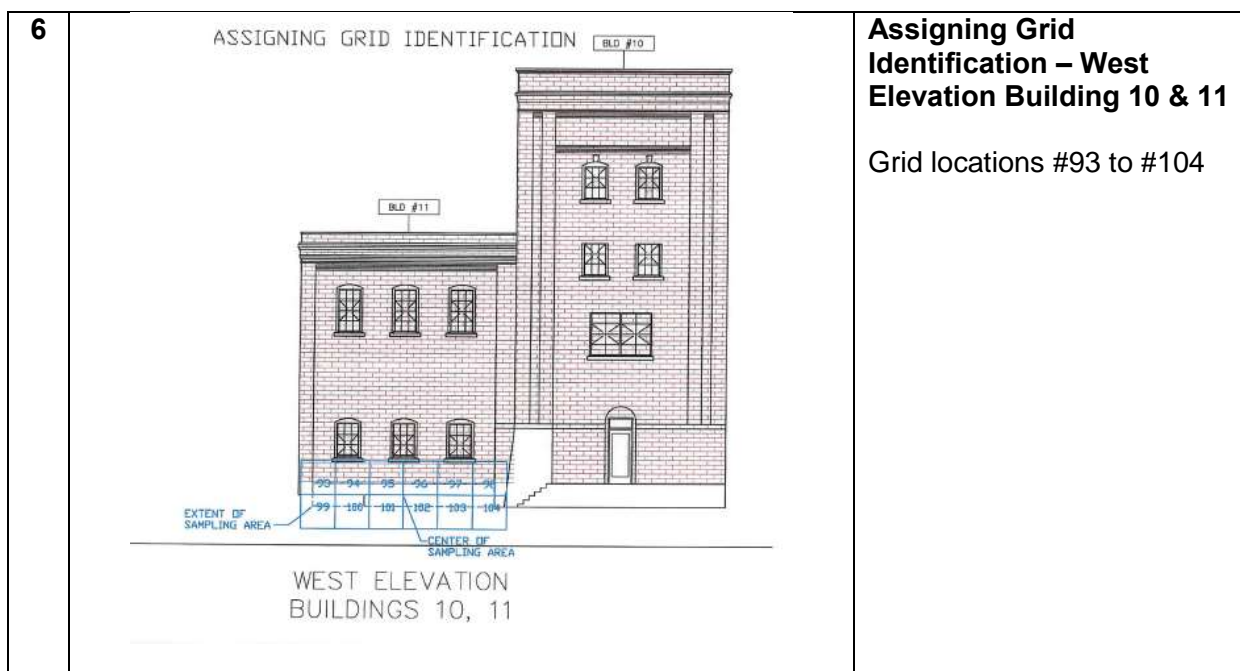
NVL, with Dave Leonard CIH on-site, conducted the testing on March 11, 2019 to test for PCBs. This substrate sampling was conducted following the conclusion of all Phase I work to remove PCB-containing paint coatings from the building and following the approval of all Phase I paint removal work by both NVL and the owner.

SAMPLE LOCATION SELECTION

The sample location selection protocol identified in NVL's *Substrate Sampling Plan* involved using a grid system. The following details how the grid pattern was established for Buildings 10, 11 and 13 where the concrete substrate was located.

1	<p>DETERMINING SAMPLING GRID LOCATION, TYPICAL</p>  <p>CENTER OF SAMPLING AREA EXTENT OF SAMPLING AREA</p> <p>WEST ELEVATION BUILDING 13</p>	<p>Determining sampling grid location – typical – West Elevation Building 13</p>
2	<p>ESTABLISHING GRID PATTERN</p>  <p>CENTER OF SAMPLING AREA</p> <p>WEST ELEVATION BUILDING 13</p>	<p>Establishing grid pattern – West Elevation Building 13</p>

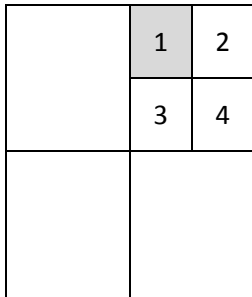
3	<p style="text-align: center;">ASSIGNING GRID IDENTIFICATION</p>  <p style="text-align: center;">WEST ELEVATION BUILDING 13</p>	<p>Assigning Grid Identification – West Elevation Building 13</p> <p>Grid locations #1 to #36</p>
4	<p style="text-align: center;">ASSIGNING GRID IDENTIFICATION</p>  <p style="text-align: center;">EAST ELEVATION BUILDING 13</p>	<p>Assigning Grid Identification – East Elevation Building 13</p> <p>Grid locations #37 to #72</p>
5	<p style="text-align: center;">ASSIGNING GRID IDENTIFICATION</p>  <p style="text-align: center;">SOUTH ELEVATION NORTH ELEVATION BUILDING 13 BUILDING 13</p>	<p>Assigning Grid Identification – South & North Elevation Building 13</p> <p>Grid locations #73 to #92</p>



Once the grid pattern and the 104 grid locations were identified, in order to define a smaller area to sample (the larger grid size being appropriate to the visual clearance sampling but not necessary or appropriate for gathering substrate material), the sampling grid was then further divided into four Grids (2.5' x 2.5') (Sub-Grids), and each of the Sub-Grids was again divided into four more smaller Grids (15"x15") (Sub-Sub-Grids).

The following table graphically shows how any Grid was further divided into a Sub-Grid and into a Sub-Sub-Grid along with numbering designation system:

1	Grid	Each = ~5' x ~5'					
2	Sub-Grid	Each = ~ 2.5' x ~2.5' Shown is the numbering designation system Highlighted is Sub-Grid #2	<table><tr><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td></tr></table>	1	2	3	4
1	2						
3	4						

3	Sub-Sub-Grid	<p>Each = ~ 15" x ~15"</p> <p>Shown is the numbering designation system</p> <p>Highlighted is Sub-Sub-Grid #1</p>	
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Once this grid pattern system was established, the three sampling locations were selected using the random number generator at www.random.org.

After the random selection of the three sampling locations, the selection of the location for duplicate and split samples was also performed using the random number generator at www.random.org.

The following summarizes the locations identified using the random number generator:

Sample Location	Grid	Sub-Grid	Sub-Sub-Grid	QC	QC
1	44	4* 3	4	duplicate	split
2	62	1	3	-	-
3	72	3** 1	1	-	-

*=For Grid location 44, Sub-Grid location 1 did not exist due to the fact that Sub-Grids 1 and 2 were on the brick surface. As a result, using the random number generator and selecting between Sub-Grids 3 and 4, Sub-Grid 3 was selected. The Sub-Sub-Grid location was kept since it was already selected by the random number generator.

**= For Grid location 72, Sub-Grid location 3 did not exist due to the fact that this location was at the corner of the concrete and Sub-Grids 2, 3 and 4 were not on a concrete surface. As a result, only Sub-Grid 1 was valid. The Sub-Sub-Grid location was kept since it was already selected by the random number generator.

Sample identification was also made per the protocols identified in NVL's *Substrate Sampling Plan* and are indicated as follows:

Sample	Sample Location	Grid	Sub Grid	Sub-Sub Grid	Sample Identification
1	1	44	4* 3	4	31119-13EG-44
2	2	62	1	3	31119-13EG-62
3	3	72	3** 1	1	31119-13EG-72
4	1	44	4* 3	4	31119-13EG-44-DUP
5	1	44	4* 3	4	31119-13EG-44-SPLIT

SAMPLE COLLECTION

Surface debris, if any, was removed using a clean brush and cloth as described in NVL's *Substrate Sampling Plan* prior to drilling.

Samples were collected using an impact hammer drill with a 5/8 inch concrete drill bit to generate a uniform, finely ground powder. Depth was controlled to be no more than one half inch by marking the depth with tape on the drill bit.

The drill bit was cleaned and decontaminated before use, and after each sample was obtained per the description in the sampling plan, which included scrubbing with water containing detergent, followed by rinsing with clean water and then rinsing/wiping the surface with hexane.

Clean, previously unused disposable gloves were used at each sample location.


Two holes needed to be drilled to obtain an approximated 10 grams of material per sample.


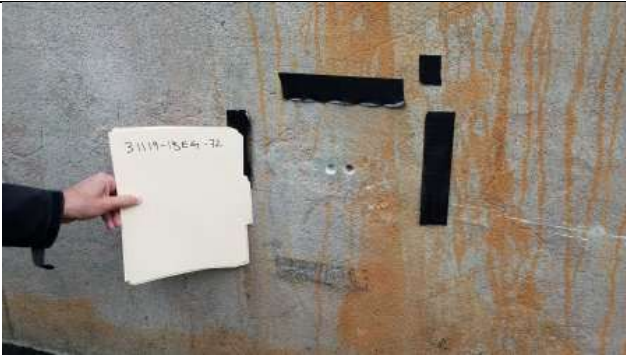

The split sample was collected at the same time as the original sample at that location. This was achieved by drilling four holes to generate approximately 20 grams of material that was then put into a single sample container. The closed sample container was then shaken to mix the sample and then half of the contents were then put into the "split" sample container leaving approximately 10 grams of material in each container.

The field duplicate sample was a separate sample collected as close as possible to the same point as the original sample at that location. Prior to the sample being collected, the same procedures for cleaning and decontaminating the drill bit were followed.

OBSERVATIONS

The following photographs note observations made when testing occurred on March 11, 2019.

1		<p>Location 44-3-4</p> <p>Samples collected at this location: 31119-13EG-44 31119-13EG-44-DUP 31119-13EG-44-SPLIT</p> <p>Streaking on the concrete surface was caused by the application of a moss killer in 2018</p> <p>Surface debris was removed using a clean brush and cloth prior to drilling.</p> <p>The six holes at this location are the result of first drilling four holes to create ~20 grams of material to create split QA/QC samples. The second two holes were for collection of ~10 grams of material for the duplicate QA/QC sample.</p>
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2		<p>Location 62-1-3</p> <p>Sample collected at this location: 31119-13EG-62</p> <p>Two holes were drilled at this location to obtain ~10 grams of material for the single sample.</p>
3		<p>Location 72-1-1</p> <p>Sample collected at this location: 31119-13EG-72</p> <p>Two holes were drilled at this location to obtain ~10 grams of material for the single sample.</p>
4		<p>Concrete Drill Bit</p> <p>Samples were collected using an impact hammer drill with a 5/8 inch concrete drill bit to generate a uniform, finely ground powder. Depth was controlled to be no more than one half inch by marking the depth with tape on the drill bit.</p>

SAMPLE SUBMISSION

NVL maintained exclusive custody, control and security of samples collected and relinquished them to the selected laboratories for analysis using laboratory specific Chain of Custody (COC) forms that included fields for sample identification number, parameter for analyses, sample collection date and custody transfer signatures.

Per NVL's *Substrate Sampling Plan*, samples were submitted to accredited laboratories for analysis for PCB Aroclor content via EPA Method 8082. A Reporting Limit (RL) of less than 1 ppm was requested at the time of sample submission.

The laboratories selected for sample analysis were:

- NVL Laboratories, Inc.
- Fremont Analytical Inc.

RESULTS

The following table summarizes the results for concrete substrate testing:

CONCRETE SUBSTRATE TESTING RESULTS Sampling Date: 3/11/19						
Sample Identification	Sample Type	Lab	Sample Grid Location #	Lab RL	Total PCBs Analytical Results (PPM)	Result More Than 1 PPM?
31119-13EG-44	SPLIT & DUP	NVL	44-3-4	0.40	ND	NO
31119-13EG-44 SPLIT	SPLIT	F	44-3-4	0.804	ND	NO
31119-13EG-44 DUP	DUP	NVL	44-3-4	0.39	ND	NO
31119-13EG-62	-	NVL	62-1-3	0.39	ND	NO
31119-13EG-72	-	NVL	72-1-1	0.39	ND	NO
ND = Non-Detect PPM = Parts per million or milligrams per kilogram (mg/kg) Lab RL = Laboratory Reporting Limit N = NVL Laboratories F = Fremont Analytical						

DISCUSSION

Laboratory analysis did not detect any level of PCBs equal to or above 1 ppm in any of the samples. All samples were run with a reporting limit of less than 1 ppm. All sample results were below the requirement for unrestricted use.

Field QA/QC Procedures

Field Duplicate Samples:

- Reproducibility and representativeness of the samples was confirmed with the results of the field duplicate samples. The field duplicate samples were separate samples collected as close as possible to the same sample location and analyzed by the same laboratory (NVL). Analysis results for both duplicate samples did not detect the presence of PCBs with a reporting limit of less than 1 ppm. This meets the QA/QC requirement that laboratory analysis results must be within 75 to 125 percent of each other to be acceptable.
- A duplicate sample was taken at one of the three testing locations. In other words, 33% of the three samples taken from the three locations had a "field duplicate" which meets the QA/QC procedure criteria that a minimum of 10% of the sample set be field duplicates.

Split Samples:

- Accuracy and reproducibility of the analytical results was confirmed by the split samples. The analytical results of splitting a sample and having it analyzed at two separate laboratories (NVL Laboratories and Fremont Analytical) did not detect the presence of PCBs with a reporting limit of less than 1 ppm. This meets the QA/QC requirement that laboratory analysis results must be within 75 to 125 percent of each other for the split sample results to be acceptable.
- One sample from the three sample locations was identified as a Split Sample that was submitted to another laboratory for analysis. This is 33% of the sample locations and 25% of the 4 samples submitted to the same laboratory, which meets the QA/QC procedure criteria that a minimum of 5% of the sample set be split samples.

Laboratory QA/QC Procedures

- Both NVL Laboratories and Fremont Analytical followed the QA/QC procedures that are requirements of NVL's *Substrate Sampling Plan* which include the addition of surrogates, laboratory control sample (LCS) and LCS duplicate, matrix spike (MS) and MS duplicate and continuous calibration check (CCV) sample for all PCB analysis. All results of QA/QC procedures were within analytical protocols. Copies of the laboratory analysis are included with this report which details the QA/QC information.

CONCLUSION

Sample selection was representative of the population in that all concrete substrate was equally considered during the random selection process. Testing of the concrete substrate did not detect the presence of PCBs with a Reporting Limit of less than 1 ppm. The findings confirm that the visual clearance standards approved for brick and mortar are also reliable to confirm and approve removal of paint from concrete substrates and that PCBs contained in the historical layers of paint applied to the concrete did not migrate into the concrete substrate. These findings meet the requirements of Condition 8 of the EPA's Risk Based Work Plan Approval (RBDA) for Rainier Commons. As a result, it is recommended that Rainier Commons request modification to the RBDA to eliminate concrete substrate sampling requirements, effective as of the completion of Phase I.

Reviewed by:

Testing & Assessment Overseen by:



Munaf Khan
Project Manager
Laboratory Director / President



David Leonard MSPH, CIH
Certified Industrial Hygienist
Technical Resource Expert



ATTACHMENTS

Laboratory Testing Reports:

- NVL Laboratories Inc. Batch Number 1904660
- Fremont Analytical Inc. Analytical Report Work Order Number 1903135

REFERENCED

- Condition 8 of the EPA's December 18, 2013 Risk Based Disposal Approval for Rainier Commons (RBDA)
- NVL *Substrate Sampling Plan* (Exhibit 11 to Phase 1 IPWP), revised to include and match the EPA SOP.
- Exhibit 12 of the Phase I Individual Phased Work Plan (Phase I IPWP)
- Visual clearance standards required in Condition 7 of the RBDA and Exhibit 12 of the Phase IIPWP

March 13, 2019



Mr. Marcus Gladden
NVL Field Services Division
4708 Aurora Ave. N.
Seattle, 98103

Re: **NVL Batch 1904660.00**

Project Name/Number: 2019-494

Project location: 3100 Airport Way South Seattle, WA 98134

Dear Mr. Gladden,

Enclosed please find test results for samples submitted to our laboratory for analysis. Preparation and analysis of these samples were conducted in accordance with published industry standards and methods specified on the attached analytical report.

The content of this package consists of the following:

- Case Narrative & Definition of Data Qualifiers
- Analytical Test Results
- Applicable QC Summary
- Client Chain-of-Custody (CoC)
- NVL Receiving Record

The report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client will be discarded after two weeks.

Thank you for using our laboratory services. If you need further assistance, please contact us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

A handwritten signature in black ink, appearing to read "Nick Ly".

Nick Ly, Technical Director

Enclosure: Sample Results

Phone: 206.547.0100 | Fax: 206.634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103

Case Narrative:

The following summarizes samples received on date as shown on the accompanied Chain of custody by NVL Laboratories, Inc. from NVL Laboratories, Inc. for Project Number: 2019-494. Samples were logged in for PCB analysis per client request using both customer sample ID's and laboratory assigned ID's as listed on the Chain-of-Custody (CoC). All samples as received were processed and analyzed within specified turnaround time without any abnormalities and deviations that may affect the analytical results. All quality control requirements were acceptable unless stated otherwise. The conditions of all samples were acceptable at time of receipt and all samples submitted with this batch were analyzed unless stated otherwise on the CoC.

Test Results are reported based on dry weight in milligrams per kilograms (mg/kg) for PCB samples as shown on the analytical reports.



Definition Appendix

Terms

% Rec	Percent recovery.
<	Below Reporting Limit(RL) or Limit of Quantitation(LoQ) of the instrument.
B	Blank contamination. The recorded results is associated with a contaminated blank.
DF	Dilution Factor
J	The reported concentration is an estimated value because something may be present in the sample that interfered with the analysis.
J1	The reported concentration is an estimated value because the laboratory control sample (LCS) is out of control limits.
J2	The reported concentration is an estimated value because the percent recovery for matrix spike is out of control limits.
J3	The reported concentration is an estimated value because the relative percent difference(RPD) for duplicate analysis is out of control limits.
J4	Percent recovery is outside of established control limits.
LCS	Laboratory Control Sample.
LFS	Laboratory Fortified Spike
Limits	The upper and lower control limits for spike recoveries.
LN	Quality control sample is outside of control limits. This analyte was not detected in the sample.
LOQ	Limit of quantitation(same as RL)
mg/kg	Milligrams per kilogram.
ND	Analyte not detected or below the reporting limit of the instrument or methodology



Definition Appendix

Terms

PPM	Parts per Million.
QC Batch Group	Quality Control Batch Group. The entity that links analytical results and supporting quality control results.
R	The data are not reliable due to possible contamination or loss of material during preparation or analysis. Re-sampling and reanalysis are necessary for verification.
RL	Reporting Limit. The minimum concentration that can be quantified under routine operating conditions.
RPD	Relative Percent Difference. The relative difference between duplicate results(matrix spike, blank spike, or samples duplicate) expressed as a percentage.
RPD Limit	The maximum RPD allowed for a set of duplicate measurements(see RPD).
SMI	Surrogate has matrix interference.
Spike Conc.	The measured concentration, in sample basis units, of a spiked sample.
SURR-ND	Surrogate was not detected due to matrix interference or dilution.
ug/m3	Micrograms per cubic meter.
ug/mL	Micrograms per milliliter
mg/Kg	milligram per kilogram

ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography



Client	NVL Field Services Division	Samples Received*	4
SDG Number	1904660.00	Analyzed By	Aaron Brown
Date Reported	03/13/2019	Samples Analyzed*	4
Project Number	2019-494	Analysis Method	8082A
Location	3100 Airport Way South Seattle, WA 98134	Preparation Method	3546PR (PCB)

* for this test only

Sample Number	31119-13EG-44	Received	03/11/2019
Lab Sample ID	19024136	Matrix	Material
Initial Sample Size	5.0241 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.40	< 0.40	03/12/2019
Aroclor-1221	0.40	< 0.40	03/12/2019
Aroclor-1232	0.40	< 0.40	03/12/2019
Aroclor-1242	0.40	< 0.40	03/12/2019
Aroclor-1248	0.40	< 0.40	03/12/2019
Aroclor-1254	0.40	< 0.40	03/12/2019
Aroclor-1260	0.40	< 0.40	03/12/2019
PCBs, Total	0.40	<0.4	

Sample Number	31119-13EG-44DUP	Received	03/11/2019
Lab Sample ID	19024137	Matrix	Material
Initial Sample Size	5.1547 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.39	< 0.39	03/12/2019
Aroclor-1221	0.39	< 0.39	03/12/2019
Aroclor-1232	0.39	< 0.39	03/12/2019
Aroclor-1242	0.39	< 0.39	03/12/2019
Aroclor-1248	0.39	< 0.39	03/12/2019
Aroclor-1254	0.39	< 0.39	03/12/2019
Aroclor-1260	0.39	< 0.39	03/12/2019
PCBs, Total	0.39	<0.39	

ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography



Sample Number	31119-13EG-62	Received	03/11/2019
Lab Sample ID	19024138	Matrix	Material
Initial Sample Size	5.1491 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.39	< 0.39	03/12/2019
Aroclor-1221	0.39	< 0.39	03/12/2019
Aroclor-1232	0.39	< 0.39	03/12/2019
Aroclor-1242	0.39	< 0.39	03/12/2019
Aroclor-1248	0.39	< 0.39	03/12/2019
Aroclor-1254	0.39	< 0.39	03/12/2019
Aroclor-1260	0.39	< 0.39	03/12/2019
PCBs, Total	0.39	<0.39	

Sample Number	31119-13EG-72	Received	03/11/2019
Lab Sample ID	19024139	Matrix	Material
Initial Sample Size	5.1472 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.39	< 0.39	03/12/2019
Aroclor-1221	0.39	< 0.39	03/12/2019
Aroclor-1232	0.39	< 0.39	03/12/2019
Aroclor-1242	0.39	< 0.39	03/12/2019
Aroclor-1248	0.39	< 0.39	03/12/2019
Aroclor-1254	0.39	< 0.39	03/12/2019
Aroclor-1260	0.39	< 0.39	03/12/2019
PCBs, Total	0.39	<0.39	



Quality Control Results

Project Number:	2019-494	SDG Number:	1904660
		Project Manager:	Marcus Gladden
QC Batch(es):	Q910	Analysis Method:	8082A
QC Batch Method:	3546PR (PCB)	Analysis Description:	Polychlorinated Biphenyls by Gas Chromatography
Preparation Date:	03/12/2019		
Blank: MBLK-1904660			

Analyte	Blank Result	Units	DF	RL	Control Limit	Qualifiers
Aroclor-1016	ND	mg/Kg	1	1.0	1	
Aroclor-1221	ND	mg/Kg	1	1.0	1	
Aroclor-1232	ND	mg/Kg	1	1.0	1	
Aroclor-1242	ND	mg/Kg	1	1.0	1	
Aroclor-1248	ND	mg/Kg	1	1.0	1	
Aroclor-1254	ND	mg/Kg	1	1.0	1	
Aroclor-1260	ND	mg/Kg	1	1.0	1	
PCBs, Total	ND	mg/Kg	1	1.0	1	
<i>Surrogates:</i>				% Rec		
Tetrachloro-m-xylene			1	75	40-140	
Decachlorobiphenyl			1	90	40-140	

Lab Control Sample: LCS-1254-1904660

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	% Rec Limits	Qualifiers
Aroclor-1254	17.4	mg/Kg	1	20.0	87	40-140	
<i>Surrogates:</i>							
Tetrachloro-m-xylene			1		73	40-140	
Decachlorobiphenyl			1		92	40-140	

Lab Control Sample: LCS-1016-1260-1904660

Lab Control Sample Duplicate: LCSD-1016-1260-1904660

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	Limits	RPD	RPD Limit	Qualifiers
Aroclor-1016	15.5	mg/Kg	1	20.0	78	40-140			
	14.9			20.0	74	40-140	4	50	
Aroclor-1260	20.7	mg/Kg	1	20.0	104	40-140			
	20			20.0	100	40-140	4	50	
<i>Surrogates:</i>									
Tetrachloro-m-xylene			1		71	40-140			
					66	40-140			
Decachlorobiphenyl			1		94	40-140			
					91	40-140			



Surrogate Recovery Summary Report

Client	NVL Field Services Division		SDG Number	1904660	
Project	2019-494				
Customer Sample ID	Lab Sample ID	Analyte	Recovery	Limits	
31119-13EG-44	19024136	Decachlorobiphenyl	88%	40-140	
31119-13EG-44	19024136	Tetrachloro-m-xylene	72%	40-140	
31119-13EG-44DUP	19024137	Decachlorobiphenyl	89%	40-140	
31119-13EG-44DUP	19024137	Tetrachloro-m-xylene	72%	40-140	
31119-13EG-62	19024138	Decachlorobiphenyl	82%	40-140	
31119-13EG-62	19024138	Tetrachloro-m-xylene	51%	40-140	
31119-13EG-72	19024139	Decachlorobiphenyl	70%	40-140	
31119-13EG-72	19024139	Tetrachloro-m-xylene	47%	40-140	
LCS-1016-1260-1904660	LCS-1016-1260-1904660	Decachlorobiphenyl	94%	40-140	
LCS-1016-1260-1904660	LCS-1016-1260-1904660	Tetrachloro-m-xylene	71%	40-140	
LCS-1254-1904660	LCS-1254-1904660	Decachlorobiphenyl	92%	40-140	
LCS-1254-1904660	LCS-1254-1904660	Tetrachloro-m-xylene	73%	40-140	
LCSD-1016-1260-1904660	LCSD-1016-1260-1904660	Decachlorobiphenyl	91%	40-140	
LCSD-1016-1260-1904660	LCSD-1016-1260-1904660	Tetrachloro-m-xylene	66%	40-140	
MBLK-1904660	MBLK-1904660	Decachlorobiphenyl	90%	40-140	
MBLK-1904660	MBLK-1904660	Tetrachloro-m-xylene	75%	40-140	

* Recovery outside limits

INITIAL AND CONTINUING CALIBRATION VERIFICATIONSDG No: **1904660**

Contract:

Determination: **8082 PCB Aroclors <Material>**

Run	Sample	Source	Analyzed	Analyte	True	Found	Unit	% Rec	Limits
R000903	CCV1-1016-1260	PCB_2017-1-2	03/12/2019	Aroclor-1016	5	5	ug/mL	100	80-120
		PCB_2017-1-2	03/12/2019	Aroclor-1260	5	5	ug/mL	100	80-120
	CCV1-1254	PCB_2017-1-3	03/12/2019	Aroclor-1254	5	5	ug/mL	100	80-120
	ICV 1016-1254-1260	PCB_2017-1-4	03/12/2019	Aroclor-1016	5	5.363	ug/mL	107	85-115
		PCB_2017-1-4	03/12/2019	Aroclor-1254	5	5.526	ug/mL	111	85-115
		PCB_2017-1-4	03/12/2019	Aroclor-1260	5	5.703	ug/mL	114	85-115
	CCV2-1016-1260	PCB_2017-1-2	03/12/2019	Aroclor-1016	5	4.951	ug/mL	99	80-120
		PCB_2017-1-2	03/12/2019	Aroclor-1260	5	5.392	ug/mL	108	80-120
	CCV2-1254	PCB_2017-1-3	03/12/2019	Aroclor-1254	5	5.224	ug/mL	104	80-120

% Rec = Percent recovery

* = Percent recovery not within control limits

ORGANICS LABORATORY SERVICES



Company NVL Field Services Division Address 4708 Aurora Ave. N. Seattle, WA 98103 Project Manager Mr. Marcus Gladden Phone (206) 547-0100 cell (b) (6)	NVL Batch Number 1904660.00 TAT 2 Days AH No Rush TAT Due Date 3/13/2019 Time 3:50 PM Email marcus.g@nvlabs.com Fax (206) 634-1936
---	---

Project Name/Number: 2019-494	Project Location: 3100 Airport Way South Seattle, WA 98134
--------------------------------------	---

Subcategory Quantitative analysis

Item Code ORG-05 **Method** 8082 PCB Aroclors <Bulk>

Total Number of Samples 4 **Rush Samples**

	Lab ID	Sample ID	Description	A/R
1	19024136	31119-13EG-44		A
2	19024137	31119-13EG-44DUP		A
3	19024138	31119-13EG-62		A
4	19024139	31119-13EG-72		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Client				
Office Use Only					
	Print Name	Signature	Company	Date	Time
Received by	Kaiser Wiggins		NVL	3/11/19	1550
Analyzed by	<i>Am Ben</i>	<i>[Signature]</i>	NVL	3/12/19	14:00
Results Called by					
<input type="checkbox"/> Faxed <input type="checkbox"/> Emailed					
Special Instructions:					

Entered By: Kaiser Wiggins Date: 3/11/2019 Time: 6:04 PM 1 of 1

RCLLC 0006968

NVL Laboratories, Inc.

4708 Aurora Ave N, Seattle, WA 98103

p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

**CHAIN of CUSTODY
SAMPLE LOG****1904660**

Client NVL Laboratories Inc
 Street 4708 Aurora Ave N
Seattle, WA 98103
 Project Manager Munaf Khan
 Project Location 3100 Airport Way South
Seattle, WA 98134

NVL Batch Number _____

Client Job Number 2012-494Total Samples 4

Turn Around Time ☐ 1 Hr ☐ 6 Hrs ☐ 3 Days ☐ 10 Days
☐ 2 Hrs ☐ 1 Day ☐ 4 Days
☐ 4 Hrs ☒ 2 Days ☐ 5 Days

Please call for TAT less than 24 Hrs

Email address _____

Phone: (206) 447-0263 Fax: (206) 447-0299

<input type="checkbox"/> Asbestos Air	<input type="checkbox"/> PCM (NIOSH 7400)	<input type="checkbox"/> TEM (NIOSH 7402)	<input type="checkbox"/> TEM (AHERA)	<input type="checkbox"/> TEM (EPA Level II)	<input type="checkbox"/> Other
<input type="checkbox"/> Asbestos Bulk	<input type="checkbox"/> PLM (EPA/600/R-93/116)	<input type="checkbox"/> PLM (EPA Point Count)	<input type="checkbox"/> PLM (EPA Gravimetry)	<input type="checkbox"/> TEM BULK	
<input type="checkbox"/> Mold/Fungus	<input type="checkbox"/> Mold Air	<input type="checkbox"/> Mold Bulk	<input type="checkbox"/> Rotometer Calibration		
METALS	Det. Limit	Matrix	RCRA Metals	<input type="checkbox"/> All 8	Other Metals
<input type="checkbox"/> Total Metals	<input type="checkbox"/> FAA (ppm)	<input type="checkbox"/> Air Filter	<input type="checkbox"/> Arsenic (As)	<input type="checkbox"/> Chromium (Cr)	<input type="checkbox"/> All 3
<input type="checkbox"/> TCLP	<input type="checkbox"/> ICP (ppm)	<input type="checkbox"/> Drinking water	<input type="checkbox"/> Barium (Ba)	<input type="checkbox"/> Lead (Pb)	<input type="checkbox"/> Copper (Cu)
<input type="checkbox"/> Cr 6	<input type="checkbox"/> GFAA (ppb)	<input type="checkbox"/> Dust/wipe (Area)	<input type="checkbox"/> Cadmium (Cd)	<input type="checkbox"/> Mercury (Hg)	<input type="checkbox"/> Nickel (Ni)
<input checked="" type="checkbox"/> Other Types of Analysis	<input type="checkbox"/> Fiberglass	<input type="checkbox"/> Nuisance Dust	<input checked="" type="checkbox"/> Other (Specify) <u>EPA 8082A - PCB Bulk</u>		
	<input type="checkbox"/> Silica	<input type="checkbox"/> Respirable Dust			

Condition of Package: ☐ Good ☐ Damaged (no spillage) ☐ Severe damage (spillage)

Seq. #	Lab ID	Client Sample Number	Comments	A/R
1		31119-13EG-44	Bldg 13, East Elev. Ground #44-3-4 Split	
2		31119-13EG-44DUP	Bldg 13, East Elev. Ground #44-3-4 Field Dup.	
3		31119-13EG-62	Bldg 13, East Elev. Ground #62-1-3	
4		31119-13EG-72	Bldg 13, East Elev. Ground #72-1-1	
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

	Print Below	Sign Below	Company	Date	Time
Sampled by	DAVE LEONARD		NVL LABS	3/11/19	9:30
Relinquished by					15:45
Received by	Kenneth Wiese		NVL Labs	3-11-19	1550
Analyzed by	Aimee Brown		NVL	3/12/19	14:00
Results Called by					
Results Faxed by					

Special Instructions: Unless requested in writing, all samples will be disposed of two (2) weeks after analysis.Results report to CONCRETE



Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

NVL Labs, Inc.
Marcus Gladden
4708 Aurora Ave. N.
Seattle, WA 98103

RE: Rainier Commons
Work Order Number: 1903135

March 13, 2019

Attention Marcus Gladden:

Fremont Analytical, Inc. received 1 sample(s) on 3/11/2019 for the analyses presented in the following report.

Polychlorinated Biphenyls (PCB) by EPA 8082
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

DoD/ELAP Certification #L17-135, ISO/IEC 17025:2005
ORELAP Certification: WA 100009-007 (NELAP Recognized)

Original

www.fremontanalytical.com

Page 1 of 10
RCLLC 0006970

CLIENT: NVL Labs, Inc.
Project: Rainier Commons
Work Order: 1903135

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1903135-001	31119-13EG-44SPLIT	03/11/2019 9:30 AM	03/11/2019 4:45 PM

CLIENT: NVL Labs, Inc.
Project: Rainier Commons

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Sample Cleanup Comments:

1903135-001A 320023 Acid: Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1903135-001A) required Acid Cleanup Procedure (Using Method No 3665A).

1903135-001A 320023 Florisil: Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1903135-001A) required Florisil Cleanup Procedure (Using Method No 3620C).

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1903135

Date Reported: 3/13/2019

Client: NVL Labs, Inc.

Collection Date: 3/11/2019 9:30:00 AM

Project: Rainier Commons

Lab ID: 1903135-001

Matrix: Solid

Client Sample ID: 31119-13EG-44SPLIT

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 23788

Analyst: SB

Aroclor 1016	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1221	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1232	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1242	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1248	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1254	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1260	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1262	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Aroclor 1268	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Total PCBs	ND	0.804		mg/Kg-dry	1	3/13/2019 11:13:03 AM
Surr: Decachlorobiphenyl	85.6	30.8 - 168		%Rec	1	3/13/2019 11:13:03 AM
Surr: Tetrachloro-m-xylene	114	30.3 - 157		%Rec	1	3/13/2019 11:13:03 AM

Sample Moisture (Percent Moisture)

Batch ID: R49992

Analyst: EAS

Percent Moisture	5.75	0.500		wt%	1	3/13/2019 10:13:58 AM
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Date: 3/13/2019

Work Order: 1903135
CLIENT: NVL Labs, Inc.
Project: Rainier Commons

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID	MB-23788	SampType:	MBLK			Units:	mg/Kg			Prep Date:	3/12/2019		RunNo:	50003	
Client ID:	MBLKS	Batch ID:	23788						Analysis Date:	3/13/2019		SeqNo:	981235		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		
Aroclor 1016		ND	0.100												
Aroclor 1221		ND	0.100												
Aroclor 1232		ND	0.100												
Aroclor 1242		ND	0.100												
Aroclor 1248		ND	0.100												
Aroclor 1254		ND	0.100												
Aroclor 1260		ND	0.100												
Aroclor 1262		ND	0.100												
Aroclor 1268		ND	0.100												
Total PCBs		ND	0.100												
Surr: Decachlorobiphenyl		64.4		50.00		129	30.8	168							
Surr: Tetrachloro-m-xylene		62.2		50.00		124	30.3	157							

Sample ID	LCS1-23788	SampType:	LCS	Units:	mg/Kg	Prep Date:	3/12/2019	RunNo:	50003		
Client ID:	LCSS	Batch ID:	23788			Analysis Date:	3/13/2019	SeqNo:	981236		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	1.08	0.100	1.000	0	108	38.5	149				
Aroclor 1260	1.03	0.100	1.000	0	103	35.4	154				
Surr: Decachlorobiphenyl	56.2		50.00		112	30.8	168				
Surr: Tetrachloro-m-xylene	61.6		50.00		123	30.3	157				

Sample ID	LCS1D-23788	SampType:	LCSD	Units:	mg/Kg	Prep Date:	3/12/2019	RunNo:	50003		
Client ID:	LCSS02	Batch ID:	23788			Analysis Date:	3/13/2019	SeqNo:	981237		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.848	0.100	1.000	0	84.8	38.5	149	1.077	23.8	20	R
Aroclor 1260	0.738	0.100	1.000	0	73.8	35.4	154	1.034	33.4	20	R
Surr: Decachlorobiphenyl	40.2		50.00		80.3	30.8	168		0		
Surr: Tetrachloro-m-xylene	49.8		50.00		99.6	30.3	157		0		



Date: 3/13/2019

Work Order: 1903135
CLIENT: NVL Labs, Inc.
Project: Rainier Commons

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID	LCS1D-23788	SampType:	LCSD	Units:	mg/Kg	Prep Date:	3/12/2019	RunNo:	50003		
Client ID:	LCSS02	Batch ID:	23788			Analysis Date:	3/13/2019	SeqNo:	981237		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:

R - High RPD observed, spike recoveries are within range.

Sample ID	LCS2-23788	SampType:	LCS	Units:	mg/Kg	Prep Date:	3/12/2019	RunNo:	50003		
Client ID:	LCSS	Batch ID:	23788			Analysis Date:	3/13/2019	SeqNo:	981238		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	1.03	0.100	1.000	0	103	31.9	167				
Surr: Decachlorobiphenyl	46.3		50.00		92.6	30.8	168				
Surr: Tetrachloro-m-xylene	55.9		50.00		112	30.3	157				



Date: 3/13/2019

Work Order: 1903135
CLIENT: NVL Labs, Inc.
Project: Rainier Commons

QC SUMMARY REPORT
Sample Moisture (Percent Moisture)

Sample ID	1903157-007ADUP	SampType:	DUP	Units:	wt%	Prep Date:	3/13/2019	RunNo:	49992			
Client ID:	BATCH	Batch ID:	R49992			Analysis Date:	3/13/2019	SeqNo:	980950			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		8.23	0.500						8.609	4.56	20	

Sample ID	1903155-001ADUP	SampType:	DUP	Units:	wt%	Prep Date:	3/13/2019	RunNo:	49992			
Client ID:	BATCH	Batch ID:	R49992			Analysis Date:	3/13/2019	SeqNo:	980953			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		12.1	0.500						12.45	3.15	20	

Client Name: **NVL**

Work Order Number: **1903135**

Logged by: **Brianna Barnes**

Date Received: **3/11/2019 4:45:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
4. Shipping container/cooler in good condition? Yes ☒ No ☐
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
6. Was an attempt made to cool the samples? Yes ☐ No ☒ NA ☐
- Bulk material.**
7. Were all items received at a temperature of $>0^{\circ}\text{C}$ to 10.0°C * Yes ☐ No ☐ NA ☒
8. Sample(s) in proper container(s)? Yes ☒ No ☐
9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
10. Are samples properly preserved? Yes ☒ No ☐
11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
14. Does paperwork match bottle labels? Yes ☒ No ☐
15. Are matrices correctly identified on Chain of Custody? Yes ☐ No ☒
16. Is it clear what analyses were requested? Yes ☒ No ☐
17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



Fremont
Analytical

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 03/11/19

Page: 1 of: 1

Laboratory Project No (internal): 1903135

Client: NVL Labs, Inc.

Address: 4708 Aurora Ave N

City, State, Zip: Seattle, WA, 98103

Telephone: 206-805-6412

Fax:

Project Name: Rainier Commons

Project No: 2012-494

Collected by: Dave Leonard

Location: 3100 Airport Way S. Seattle, WA,

Report To (PM): Marcus Gladden

PM Email: marcus.g@nvlabs.com

Special Remarks:

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*															Comments
				VOCs (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	SVOs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals**	Total (T)	EPA 6020 / 200.8	Dissolved (D)	Anions (IC)***	ED8 (8011)	
1 31119-13EG-44SPLIT	03/11/19	09:30																bldg 13- e. elev-ground- #44-3-4 split
2																		
3																		
4																		RL of <1 PPM
5																		DESIRSD
6																		
7																		
8																		
9																		
10																		

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle):

Individual:

***Anions (Circle): ☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ O-Phosphate ☐ Fluoride ☐ Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished

x

Date/Time

3/11/19

16:45

Received

x

Date/Time

3/11/19

1645

Relinquished

x

Date/Time

Received

x

Date/Time

Turn-around Time:

☐ Standard

☐ 3 Day

☒ 2 Day

☐ Next Day

Same Day ☐

(specify)

April 19, 2019

Shimon Mizrahi
Rainier Commons LLC
918 S. Horton Street, Suite 1018
Seattle, WA 98134

Subject: Polychlorinated Biphenyl (PCB) Substrate Testing
SANDSTONE – POST VISUAL CLEARANCE

Site Address: Rainier Commons, LLC
3100 Airport Way S, Seattle, WA

NVL Project#: 2012-494

Dear Mr. Mizrahi:

Per your request, NVL Laboratories Inc. (NVL) tested sandstone substrate, following final visual clearance and approval of paint removal work, for the presence of Polychlorinated Biphenyls (PCBs), at the Rainier Commons site per the conditions for such testing pursuant to Condition 8 of the EPA's December 18, 2013 Risk Based Disposal Approval for Rainier Commons. The purpose being to collect and provide data sufficient for the EPA to conclude that the visual performance standard is adequate to verify both removal of the PCB bulk waste and that when the visual clearance performance standard is met no further clean-up is likely required of the remaining substrate, with any remaining detectable levels of PCBs registering below the threshold for unrestricted use.

EXECUTIVE SUMMARY

Utilizing the "Sample Location Selection" process delineated in the *Rainier Sampling Plan for Verification of Concrete Substrate Once Visual Clearance Standard Met* (the *NVL Substrate Sampling Plan*), NVL randomly selected representative locations of the sandstone substrate. These randomly selected locations were then tested for the presence of PCBs, after all paint abatement work was completed and after all work areas were cleared utilizing the visual clearance performance standard and procedures.

Laboratory analysis of the sandstone substrate did not detect the presence of PCBs with a Reporting Limit of less than 1 ppm. The results confirm that the visual clearance standards already approved for brick and mortar are also effective for sandstone substrates. The results further confirm that PCBs contained in the historical layers of paint applied to the sandstone did not migrate into the sandstone substrate. These findings meet the requirements of Condition 8 of the EPA's Risk Based Disposal Approval (RBDA) for Rainier Commons.

Based on the findings, it is recommended that Rainier Commons request modification to the RBDA to eliminate sandstone substrate sampling requirements, effective upon the completion of the Phase I work.

BACKGROUND

Condition 8 of the EPA's Risk Based Disposal Approval for Rainier Commons requires testing of

each type of substrate, from which historical layers of paint have been removed, to determine if PCBs contained in the paint migrated into the substrate, or remain at greater than 1 ppm following visual clearance pursuant to the visual clearance performance standards applicable to the work as set forth in Condition 7 of the RBDA and Exhibit 12 of the Phase I Individual Phased Work Plan (Phase 1 IPWP). Substrate test results confirm whether or not the visual clearance performance standard is sufficient to clear that particular type of substrate and can be relied upon, without further additional destructive substrate testing, to clear that particular type of substrate for unrestricted use. That is to say the substrate does not contain PCBs greater than 1 ppm.

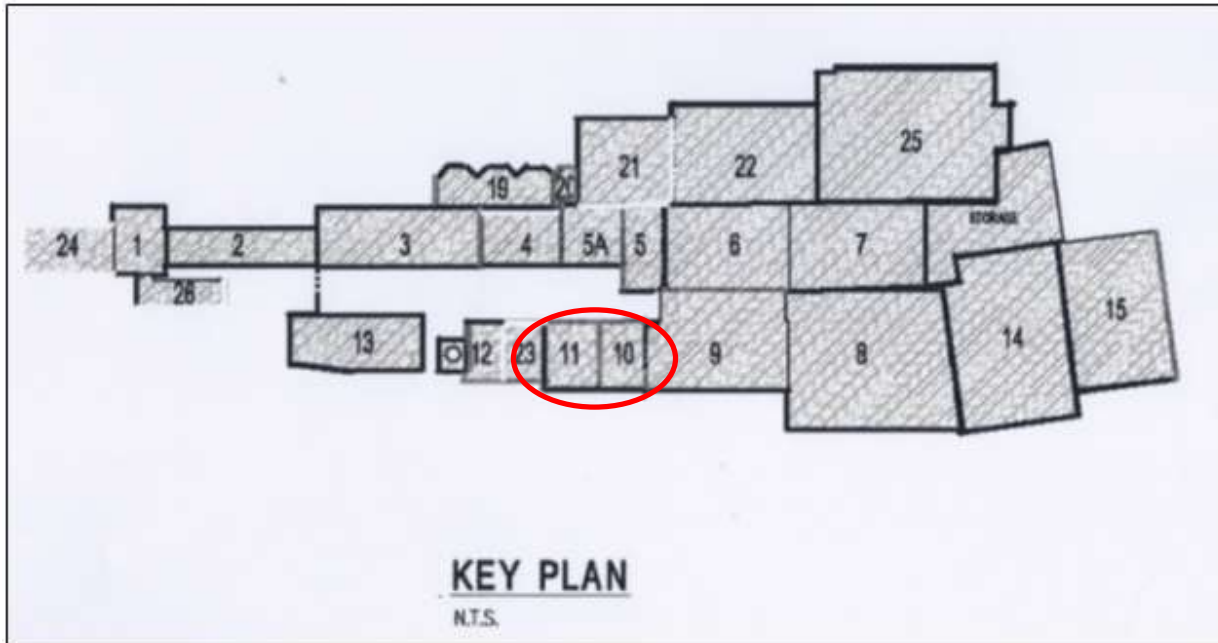
The approved NVL *Substrate Sampling Plan* requires that a Certified Industrial Hygienist (CIH) oversee all sample collection, analysis, data interpretation and reporting with regards to substrate testing. After reviewing results for samples collected to date during the Phase I work on Buildings 10, 11 and 13, it became apparent that a CIH had not been involved in all aspects of all sample planning and collection events. The purpose of some Phase I samples previously collected was to assess abatement techniques and later collected samples were initially intended to serve as post-clearance samples. The timing of work performed, sample collection, punchlist work and the vernacular of “pre-clearance” and “post-clearance” samples apparently caused some confusion upon initial review of NVL’s reporting on the laboratory results for these previously collected samples. Additionally, due to the piece meal approach in the initial series of sample collection events, the Field QA/QC procedures described in the NVL sampling plan were not adequately addressed. Given this, Rainier Commons determined to initiate the collection of a new sandstone substrate sample set, commissioning NVL’s CIH to prepare the sampling plan, oversee all sample location identification, collection, analysis, data interpretation and reporting, including all field QA/QC requirements. The body of this report provides the details of the sandstone substrate sampling that was performed March 22, 2019 in response to this request.

Earlier sampling events – not included in this report but previously reported upon to EPA - and their purpose included the following:

- Rainer Commons requested the collection and analysis of sandstone substrate samples from Building 10/11 on October 9, 2014, prior to the visual clearance of the Phase I work, to measure the efficacy of initial sandblasting efforts. These informational pre-clearance samples were used to better understand the performance of the initial sandblasting techniques employed at that time and were not intended as “clearance” samples.
- On December 1, 2014 a sandstone substrate sample was obtained by NVL Laboratory personnel for the purpose of addressing Condition 8 of the RBDA. The field samples were obtained utilizing the “Sample Collection” section of the approved NVL *Substrate Sampling Plan*.
- During a subsequent desk review of the EPA SOP for Sampling Porous Surfaces for PCBs, it was noted that the document requires that the sampled area be cleaned with a clean brush or cloth prior to drilling (Section 9.1.1). This procedural step had been omitted in the NVL Substrate Sampling Plan. No specific annotation regarding proper sample site preparation was included in the field notes, therefore, it was concluded that areas where previous testing had identified the slight presence of PCBs, additional substrate sampling was warranted to ensure the required preparation step in the EPA SOP was performed.

SITE MAP

The circled area on this site map shows the locations of buildings 10 and 11 at Rainier Commons.



METHOD

Field collection and subsequent laboratory analysis was performed in accordance with the NVL *Substrate Sampling Plan* (Exhibit 11 to Phase 1 IPWP), revised to include and match the EPA SOP.

Details in NVL's *Substrate Sampling Plan* included:

- Having a Certified Industrial Hygienist (CIH) overseeing all sample collection, analysis, data interpretation and reporting involved with this assessment
- Specific procedures to randomly select sample testing locations
- Specific protocol for identifying the samples
- Specific instructions for sample collection
- Field QA/QC procedures, which included collecting field duplicate and split samples
- Specific requirements for the laboratories selected for sample analysis

The laboratories selected for sample analysis were:

- NVL Laboratories, Inc.
- Fremont Analytical Inc.

Both are accredited laboratories for analysis for PCB Aroclor content via EPA Method 8082. A Reporting Limit of less than 1 ppm was requested at the time of sample submission consistent with the requirements of the RBDA and unrestricted use.

TESTING

NVL, with Dave Leonard CIH on-site, conducted the testing on March 22, 2019 to test for PCBs. This substrate sampling was conducted following the conclusion of all Phase I work to remove PCB-containing paint coatings from the building and following the approval of all Phase I paint removal work by both NVL and the owner.

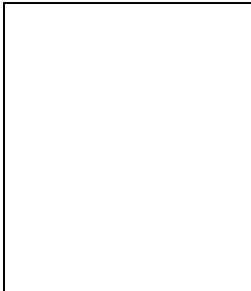
SAMPLE LOCATION SELECTION

The sample location selection protocol identified in NVL's *Substrate Sampling Plan* involved using a grid system. The following details how the grid pattern was established for Buildings 10 and 11 where the sandstone substrate was located.

1		<p>Assigning Grid Identification – West Elevation Buildings 10 & 11</p> <p>Grid locations #1 to #30</p> <p>Sampling Grid size reduced to accommodate small sampling area. Grid size 2.5' x 2.5'.</p>
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Once the grid pattern and the 30 grid locations were identified, in order to define a smaller area to sample (the larger grid size being appropriate to the visual clearance sampling but not necessary or appropriate for gathering substrate material), the sampling grid was then further divided into four Sub-Grids (15"X15") (Sub-Grids), and each of the Sub-Grids was again divided into four more smaller Sub-Sub-Grids (7.5"x7.5").

The following table graphically shows how any Grid was further divided into a Sub-Grid and into a Sub-Sub-Grid along with numbering designation system:

1	Grid	Each = ~2.5' x ~2.5' = ~30" x ~30"	
---	-------------	---------------------------------------	--

2	Sub-Grid	<p>Each = ~15" x ~15"</p> <p>Shown is the numbering designation system</p> <p>Highlighted is Sub-Grid #2</p>	<table><tr><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td></tr></table>	1	2	3	4				
1	2										
3	4										
3	Sub-Sub-Grid	<p>Each = ~ 7.5" x ~7.5"</p> <p>Shown is the numbering designation system</p> <p>Highlighted is Sub-Sub-Grid #1</p>	<table><tr><td rowspan="2"></td><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td></tr><tr><td></td><td colspan="2"></td></tr></table>		1	2	3	4			
	1	2									
	3	4									

Once this grid pattern system was established, the three sampling locations were selected using the random number generator at www.random.org.

After the random selection of the three sampling locations, the selection of the location for duplicate and split samples was also performed using the random number generator at www.random.org.

The following summarizes the locations identified using the random number generator:

Sample Location	Grid	Sub-Grid	Sub-Sub-Grid	QC	QC
1	26	1	2	duplicate	-
2	8	3	4	-	-
3	24	1	3	-	split

Sample identification was also made per the protocols identified in NVL's *Substrate Sampling Plan* and are indicated as follows:

Sample	Sample Location	Grid	Sub Grid	Sub-Sub Grid	Sample Identification
1	1	26	1	2	32219-10WG-26-DUPA
2	1	26	1	2	32219-10WG-26-DUPB
3	2	8	3	4	32219-10WG-8
4	3	24	1	3	32219-10WG-24-SPLITA
5	3	24	1	3	32219-10WG-24-SPLITB

SAMPLE COLLECTION

Surface debris, if any, was removed using a clean brush and cloth as described in NVL's *Substrate Sampling Plan* prior to drilling.

Samples were collected using an impact hammer drill with a 5/8 inch concrete drill bit to generate a uniform, finely ground powder. Depth was controlled to be no more than one half inch by marking the depth with tape on the drill bit.

The drill bit was cleaned and decontaminated before use, and after each sample was obtained per the description in the sampling plan, which included scrubbing with water containing detergent, followed by rinsing with clean water, then rinsing/wiping the surface with hexane.

Clean, previously unused disposable gloves were used at each sample location.

Two holes needed to be drilled to obtain an approximated 10 grams of material per sample.





The split sample was collected at the same time as the original sample at that location. This was achieved by drilling four holes to generate approximately 20 grams of material that was then put into a single sample container. The closed sample container was then shaken to mix the sample and then half of the contents were then put into the "split" sample container leaving approximately 10 grams of material in each container.





The field duplicate sample was a separate sample collected as close as possible to the same point as the original sample at that location. Prior to the sample being collected, the same procedures for cleaning and decontaminating the drill bit were followed.

OBSERVATIONS

The following photographs note observations made when testing occurred on March 22, 2019.

1		<p>Location 26-1-2</p> <p>Area located, identified and prepared for sample collection. This particular location was for duplicate samples.</p> <p>Sample collected at this location: 32219-10WG-26-DUPA</p> <p>Surface debris was removed using a clean brush and cloth prior to drilling.</p>
---	---	---

2		Location 26-1-2 As with all locations, samples were collected using an impact hammer drill with a 5/8 inch concrete drill bit to generate a uniform, finely ground powder. Depth was controlled to be no more than one half inch by marking the depth with tape on the drill bit.
3		Cleaning Drill Bit Step 1- Soap wash The drill bit was cleaned and decontaminated before use, and after each sample was obtained per the description in the sampling plan, which included scrubbing with water containing detergent, followed by rinsing with clean water, then rinsing/wiping the surface with hexane.
4		Cleaning Drill Bit Step 2 - Rinse The washed drilled bit is being rinsed in a bucket with clean water.
5		Cleaning Drill Bit Step 3 – Hexane The surface of the rinsed drill bit is being wiped with a clean cloth that was wetted with hexane.

6		<p>Location 26-1-2</p> <p>Area prepared to collect the field duplicate sample which was a separate QA/QC sample collected as close as possible to the original sample.</p> <p>Sample collected at this location: 32219-10WG-26-DUPB</p>
7		<p>Location 26-1-2</p> <p>To collect the field duplicate sample two holes were drilled adjacent to the previous drill holes to obtain ~10 grams of material for the single sample.</p>
8		<p>Location 8-3-4</p> <p>Sample collected at this location: 32219-10WG-8</p>
9		<p>Location 8-3-4</p> <p>Collecting sample 32219-10WG-8 with an impact hammer drill with a 5/8 inch concrete drill bit with the finely ground powder dropping onto to paper below to catch the material.</p>

10		<p>Location 24-1-3</p> <p>Four holes were drilled to create ~20 grams of material to create the split QA/QC samples.</p> <p>Samples collected at this location: 32219-10WG-24-SPLITA 32219-10WG-24-SPLITB</p>
----	---	--

SAMPLE SUBMISSION

NVL maintained exclusive custody, control and security of samples collected and relinquished them to the selected laboratories for analysis using laboratory specific Chain of Custody (COC) forms that included fields for sample identification number, parameter for analyses, sample collection date and custody transfer signatures.

Per NVL's *Substrate Sampling Plan*, samples were submitted to accredited laboratories for analysis for PCB Aroclor content via EPA Method 8082. A Reporting Limit (RL) of less than 1 ppm was requested at the time of sample submission.

The laboratories selected for sample analysis were:

- NVL Laboratories, Inc.
- Fremont Analytical Inc.

RESULTS

The following table summarizes the results for sandstone substrate testing:

SANDSTONE SUBSTRATE TESTING RESULTS						
Sampling Date: 3/22/19						
Sample Identification	Sample Type	Lab	Sample Grid Location #	Lab RL	Total PCBs Analytical Results (PPM)	Result More Than 1 PPM?
32219-10WG-26-DUPA	DUP	NVL	26-1-2	0.40	0.42	NO
32219-10WG-26-DUPB	DUP	NVL	26-1-2	0.39	ND	NO
32219-10WG-8	-	NVL	8-3-4	0.39	ND	NO
32219-10WG-24-SPLITA	SPLIT	NVL	24-1-3	0.38	0.41	NO
32219-10WG-24-SPLITB	SPLIT	F	24-1-3	0.988	ND	NO
ND = Non-Detect PPM = Parts per million or milligrams per kilogram (mg/kg) Lab RL = Laboratory Reporting Limit N = NVL Laboratories F = Fremont Analytical						

DISCUSSION

Laboratory analysis did not detect any level of PCBs equal to or above 1 ppm in any of the samples. All samples were run with a reporting limit of less than 1 ppm. All samples results were below the requirement for unrestricted use.

Field QA/QC Procedures

Field Duplicate Samples:

- Reproducibility and representativeness of the samples was confirmed with the results of the field duplicate samples. The field duplicate samples were separate samples collected as close as possible to the same sample location and analyzed by the same laboratory (NVL). Analysis results for both duplicate samples did not detect the presence of PCBs with a reporting limit of less than 1 ppm. This meets the QA/QC requirement that laboratory analysis results must be within 75 to 125 percent of each other to be acceptable.
- A duplicate sample was taken at one of the three testing locations. In other words, 33% of the three samples taken from the three locations had a "field duplicate" which meets the QA/QC procedure criteria that a minimum of 10% of the sample set be field duplicates.

Split Samples:

- Accuracy and reproducibility of the analytical results was confirmed by the split samples. The analytical results of splitting a sample and having it analyzed at two separate laboratories (NVL Laboratories and Fremont Analytical) did not detect the presence of PCBs with a reporting limit of less than 1 ppm. This meets the QA/QC requirement that laboratory analysis results must be within 75 to 125 percent of each other for the split sample results to be acceptable.
- One sample from the three sample locations was identified as a Split Sample that was submitted to another laboratory for analysis. This is 33% of the sample locations and 25% of the 4 samples submitted to the same laboratory, which meets the QA/QC procedure criteria that a minimum of 5% of the sample set be split samples.

Laboratory QA/QC Procedures

- Both NVL Laboratories and Fremont Analytical followed the QA/QC procedures that are requirements of NVL's *Substrate Sampling Plan* which include the addition of surrogates, laboratory control sample (LCS) and LCS duplicate, matrix spike (MS) and MS duplicate and continuous calibration check (CCV) sample for all PCB analysis. All results of QA/QC procedures were within analytical protocols. Copies of the laboratory analysis are included with this report which details the QA/QC information.

CONCLUSION

Sample selection was representative of the population in that all sandstone substrate was equally considered during the random selection process. Testing of the sandstone substrate did not detect the presence of PCBs with a Reporting Limit of less than 1 ppm. The findings confirm that the visual clearance standards approved for brick and mortar are also reliable to

confirm and approve removal of paint from sandstone substrates and that PCBs contained in the historical layers of paint applied to the sandstone did not migrate into the sandstone substrate. These findings meet the requirements of Condition 8 of the EPA's Risk Based Work Plan Approval (RBDA) for Rainier Commons. As a result, it is recommended that Rainier Commons request modification to the RBDA to eliminate sandstone substrate sampling requirements, effective as of the completion of Phase I.

Reviewed by:

Testing & Assessment Overseen by:



Munaf Khan
Project Manager
Laboratory Director / President



David Leonard MSPH, CIH
Certified Industrial Hygienist
Technical Resource Expert

ATTACHMENTS

Laboratory Testing Reports:

- NVL Laboratories Inc. Batch Number 1905670
- Fremont Analytical Inc. Analytical Report Work Order Number 1903329

REFERENCED

- Condition 8 of the EPA's December 18, 2013 Risk Based Disposal Approval for Rainier Commons (RBDA)
- NVL *Substrate Sampling Plan* (Exhibit 11 to Phase 1 IPWP), revised to include and match the EPA SOP.
- Exhibit 12 of the Phase I Individual Phased Work Plan (Phase I IPWP)
- Visual clearance standards required in Condition 7 of the RBDA and Exhibit 12 of the Phase IIPWP

March 25, 2019



Mr. Marcus Gladden
NVL Field Services Division
4708 Aurora Ave. N.
Seattle, 98103

Re: **NVL Batch 1905670.00**

Project Name/Number: 2012-494

Project location: 3100 Airport Way South Seattle, WA 98134

Dear Mr. Gladden,

Enclosed please find test results for samples submitted to our laboratory for analysis. Preparation and analysis of these samples were conducted in accordance with published industry standards and methods specified on the attached analytical report.

The content of this package consists of the following:

- Case Narrative & Definition of Data Qualifiers
- Analytical Test Results
- Applicable QC Summary
- Client Chain-of-Custody (CoC)
- NVL Receiving Record

The report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client will be discarded after two weeks.

Thank you for using our laboratory services. If you need further assistance, please contact us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

A handwritten signature in black ink, appearing to read "Nick Ly".

Nick Ly, Technical Director

Enclosure: Sample Results

Phone: 206.547.0100 | Fax: 206.634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103

Case Narrative:

The following summarizes samples received on date as shown on the accompanied Chain of custody by NVL Laboratories, Inc. from NVL Field Services Division for Project Number: 2012-494. Samples were logged in for PCB analysis per client request using both customer sample ID's and laboratory assigned ID's as listed on the Chain-of-Custody (CoC). All samples as received were processed and analyzed within specified turnaround time without any abnormalities and deviations that may affect the analytical results. All quality control requirements were acceptable unless stated otherwise. The conditions of all samples were acceptable at time of receipt and all samples submitted with this batch were analyzed unless stated otherwise on the CoC.

Test Results are reported based on dry weight in micrograms per kilograms (mg/kg) for PCB samples as shown on the analytical reports.



Definition Appendix

Terms

% Rec	Percent recovery.
<	Below Reporting Limit(RL) or Limit of Quantitation(LoQ) of the instrument.
B	Blank contamination. The recorded results is associated with a contaminated blank.
DF	Dilution Factor
J	The reported concentration is an estimated value because something may be present in the sample that interfered with the analysis.
J1	The reported concentration is an estimated value because the laboratory control sample (LCS) is out of control limits.
J2	The reported concentration is an estimated value because the percent recovery for matrix spike is out of control limits.
J3	The reported concentration is an estimated value because the relative percent difference(RPD) for duplicate analysis is out of control limits.
J4	Percent recovery is outside of established control limits.
LCS	Laboratory Control Sample.
LFS	Laboratory Fortified Spike
Limits	The upper and lower control limits for spike recoveries.
LN	Quality control sample is outside of control limits. This analyte was not detected in the sample.
LOQ	Limit of quantitation(same as RL)
mg/kg	Milligrams per kilogram.
ND	Analyte not detected or below the reporting limit of the instrument or methodology



Definition Appendix

Terms

PPM	Parts per Million.
QC Batch Group	Quality Control Batch Group. The entity that links analytical results and supporting quality control results.
R	The data are not reliable due to possible contamination or loss of material during preparation or analysis. Re-sampling and reanalysis are necessary for verification.
RL	Reporting Limit. The minimum concentration that can be quantified under routine operating conditions.
RPD	Relative Percent Difference. The relative difference between duplicate results(matrix spike, blank spike, or samples duplicate) expressed as a percentage.
RPD Limit	The maximum RPD allowed for a set of duplicate measurements(see RPD).
SMI	Surrogate has matrix interference.
Spike Conc.	The measured concentration, in sample basis units, of a spiked sample.
SURR-ND	Surrogate was not detected due to matrix interference or dilution.
ug/m3	Micrograms per cubic meter.
ug/mL	Micrograms per milliliter
mg/Kg	milligram per kilogram

ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography



Client	NVL Field Services Division	Samples Received*	4
SDG Number	1905670.00	Analyzed By	Evelyn Ahulu
Date Reported	03/25/2019	Samples Analyzed*	4
Project Number	2012-494	Analysis Method	8082A
Location	3100 Airport Way South Seattle, WA 98134	Preparation Method	3546PR (PCB)

* for this test only

Sample Number	32219-10WG-26-DUPA	Received	03/22/2019
Lab Sample ID	19029516	Matrix	Bulk/Dust
Initial Sample Size	5.0449 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.40	< 0.40	03/22/2019
Aroclor-1221	0.40	< 0.40	03/22/2019
Aroclor-1232	0.40	< 0.40	03/22/2019
Aroclor-1242	0.40	< 0.40	03/22/2019
Aroclor-1248	0.40	< 0.40	03/22/2019
Aroclor-1254	0.40	0.42	03/22/2019
Aroclor-1260	0.40	< 0.40	03/22/2019
PCBs, Total	0.40	0.42	

Sample Number	32219-10WG-26-DUPB	Received	03/22/2019
Lab Sample ID	19029517	Matrix	Bulk/Dust
Initial Sample Size	5.0739 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.39	< 0.39	03/22/2019
Aroclor-1221	0.39	< 0.39	03/22/2019
Aroclor-1232	0.39	< 0.39	03/22/2019
Aroclor-1242	0.39	< 0.39	03/22/2019
Aroclor-1248	0.39	< 0.39	03/22/2019
Aroclor-1254	0.39	< 0.39	03/22/2019
Aroclor-1260	0.39	< 0.39	03/22/2019
PCBs, Total	0.39	<0.39	

ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography



Sample Number	32219-10WG-8	Received	03/22/2019
Lab Sample ID	19029518	Matrix	Bulk/Dust
Initial Sample Size	5.098 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.39	< 0.39	03/22/2019
Aroclor-1221	0.39	< 0.39	03/22/2019
Aroclor-1232	0.39	< 0.39	03/22/2019
Aroclor-1242	0.39	< 0.39	03/22/2019
Aroclor-1248	0.39	< 0.39	03/22/2019
Aroclor-1254	0.39	< 0.39	03/22/2019
Aroclor-1260	0.39	< 0.39	03/22/2019
PCBs, Total	0.39	<0.39	

Sample Number	32219-10WG-24-SplitA	Received	03/22/2019
Lab Sample ID	19029519	Matrix	Bulk/Dust
Initial Sample Size	5.2222 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	0.38	< 0.38	03/22/2019
Aroclor-1221	0.38	< 0.38	03/22/2019
Aroclor-1232	0.38	< 0.38	03/22/2019
Aroclor-1242	0.38	< 0.38	03/22/2019
Aroclor-1248	0.38	< 0.38	03/22/2019
Aroclor-1254	0.38	0.41	03/22/2019
Aroclor-1260	0.38	< 0.38	03/22/2019
PCBs, Total	0.38	0.41	



Quality Control Results

Project Number:	2012-494	SDG Number:	1905670
		Project Manager:	Marcus Gladden
QC Batch(es):	Q923	Analysis Method:	8082A
QC Batch Method:	3546PR (PCB)	Analysis Description:	Polychlorinated Biphenyls by Gas Chromatography
Preparation Date:	03/22/2019		
Blank: MBLK-1905670			

Analyte	Blank Result	Units	DF	RL	Control Limit	Qualifiers
Aroclor-1016	ND	mg/Kg	1	1.0	1	
Aroclor-1221	ND	mg/Kg	1	1.0	1	
Aroclor-1232	ND	mg/Kg	1	1.0	1	
Aroclor-1242	ND	mg/Kg	1	1.0	1	
Aroclor-1248	ND	mg/Kg	1	1.0	1	
Aroclor-1254	ND	mg/Kg	1	1.0	1	
Aroclor-1260	ND	mg/Kg	1	1.0	1	
PCBs, Total	ND	mg/Kg	1	1.0	1	
<i>Surrogates:</i>				% Rec		
Tetrachloro-m-xylene			1	75	40-140	
Decachlorobiphenyl			1	85	40-140	

Lab Control Sample: LCS-1254-1905670

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	% Rec Limits	Qualifiers
Aroclor-1254	21.8	mg/Kg	1	20.0	109	40-140	
<i>Surrogates:</i>							
Tetrachloro-m-xylene			1		91	40-140	
Decachlorobiphenyl			1		99	40-140	

Lab Control Sample: LCS-1016+1260-1905670

Lab Control Sample Duplicate: LCS Dup-1905670

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	Limits	RPD	RPD Limit	Qualifiers
Aroclor-1016	19.2	mg/Kg	1	20.0	96	40-140			
	18.2			20.0	91	40-140	5	50	
Aroclor-1260	22.1	mg/Kg	1	20.0	111	40-140			
	21.4			20.0	107	40-140	3	50	
<i>Surrogates:</i>									
Tetrachloro-m-xylene			1		94	40-140			
					96	40-140			
Decachlorobiphenyl			1		112	40-140			
					102	40-140			

Surrogate Recovery Summary Report

Client	NVL Field Services Division		SDG Number	1905670	
Project	2012-494				
Customer Sample ID	Lab Sample ID	Analyte	Recovery	Limits	
32219-10WG-26-DUPA	19029516	Decachlorobiphenyl	106%	40-140	
32219-10WG-26-DUPA	19029516	Tetrachloro-m-xylene	94%	40-140	
32219-10WG-26-DUPB	19029517	Decachlorobiphenyl	103%	40-140	
32219-10WG-26-DUPB	19029517	Tetrachloro-m-xylene	97%	40-140	
32219-10WG-8	19029518	Decachlorobiphenyl	112%	40-140	
32219-10WG-8	19029518	Tetrachloro-m-xylene	98%	40-140	
32219-10WG-24-SplitA	19029519	Decachlorobiphenyl	116%	40-140	
32219-10WG-24-SplitA	19029519	Tetrachloro-m-xylene	104%	40-140	
LCS Dup-1905670	LCS Dup-1905670	Decachlorobiphenyl	102%	40-140	
LCS Dup-1905670	LCS Dup-1905670	Tetrachloro-m-xylene	96%	40-140	
LCS-1016+1260-1905670	LCS-1016+1260-1905670	Decachlorobiphenyl	112%	40-140	
LCS-1016+1260-1905670	LCS-1016+1260-1905670	Tetrachloro-m-xylene	94%	40-140	
LCS-1254-1905670	LCS-1254-1905670	Decachlorobiphenyl	99%	40-140	
LCS-1254-1905670	LCS-1254-1905670	Tetrachloro-m-xylene	91%	40-140	
MBLK-1905670	MBLK-1905670	Decachlorobiphenyl	85%	40-140	
MBLK-1905670	MBLK-1905670	Tetrachloro-m-xylene	75%	40-140	

* Recovery outside limits

INITIAL AND CONTINUING CALIBRATION VERIFICATIONSDG No: **1905670**Contract: **N/A**Determination: **8082 PCB Aroclors <Material>**

Run	Sample	Source	Analyzed	Analyte	True	Found	Unit	% Rec	Limits
R000916	CCV1 1016-1260	PCB_2017-1-2	03/22/2019	Aroclor-1016	5	5	ug/mL	100	80-120
		PCB_2017-1-2	03/22/2019	Aroclor-1260	5	5	ug/mL	100	80-120
	CCV1 1254	PCB_2017-1-3	03/22/2019	Aroclor-1254	5	5	ug/mL	100	80-120
	ICV 1016-1254- 1260	PCB_2017-1-4	03/22/2019	Aroclor-1016	5	5.305	ug/mL	106	85-115
		PCB_2017-1-4	03/22/2019	Aroclor-1254	5	5.419	ug/mL	108	85-115
		PCB_2017-1-4	03/22/2019	Aroclor-1260	5	5.771	ug/mL	115	85-115
	CCV2 1016-1260	PCB_2017-1-2	03/22/2019	Aroclor-1016	5	5.93	ug/mL	119	80-120
		PCB_2017-1-2	03/22/2019	Aroclor-1260	5	5.963	ug/mL	119	80-120
	CCV2 1254	PCB_2017-1-3	03/22/2019	Aroclor-1254	5	5.952	ug/mL	119	80-120

% Rec = Percent recovery

* = Percent recovery not within control limits

ORGANICS LABORATORY SERVICES



Company NVL Field Services Division	NVL Batch Number 1905670.00
Address 4708 Aurora Ave. N. Seattle, WA 98103	TAT 1 Day _____ AH No _____
Project Manager Mr. Marcus Gladden	Rush TAT _____
Phone (206) 547-0100	Due Date 3/25/2019 Time 12:30 PM
cell (b) (6)	Email marcus.g@nvlabs.com
	Fax (206) 634-1936

Project Name/Number: 2012-494	Project Location: 3100 Airport Way South Seattle, WA 98134
-------------------------------	--

Subcategory Quantitative analysis

Item Code ORG-05 Method 8082 PCB Aroclors <Bulk>

Total Number of Samples 4

Rush Samples _____

	Lab ID	Sample ID	Description	A/R
1	19029516	32219-10WG-26-DUPA		A
2	19029517	32219-10WG-26-DUPB		A
3	19029518	32219-10WG-8		A
4	19029519	32219-10WG-24-SplitA		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Client				
Office Use Only					
	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/22/19	1230
Analyzed by	Evelyn Abulu		NVL	3/22/19	14:00
Results Called by					
<input type="checkbox"/> Faxed <input type="checkbox"/> Emailed					
Special Instructions:					

Entered By: Emily Schubert

Date: 3/22/2019

Time: 12:17 PM

1 of 1

RCLLC 0007000

NVL Laboratories, Inc.

4708 Aurora Ave N, Seattle, WA 98103

p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

**CHAIN of CUSTODY
SAMPLE LOG**
1905670


Client NVL Laboratories Inc
Street 4708 Aurora Ave N
 Seattle, WA 98103
Project Manager Munaf Khan
Project Location 3100 Airport Way South
 Seattle, WA 98134

NVL Batch Number _____

Client Job Number 2012-494

Total Samples 4

Turn Around Time ☐ 1 Hr ☐ 6 Hrs ☐ 3 Days ☐ 10 Days
☐ 2 Hrs ☒ 1 Day ☐ 4 Days
☐ 4 Hrs ☐ 2 Days ☐ 5 Days

Please call for TAT less than 24 Hrs

Email address _____

Phone: (206) 447-0263 **Fax:** (206) 447-0299

<input type="checkbox"/> Asbestos Air	<input type="checkbox"/> PCM (NIOSH 7400)	<input type="checkbox"/> TEM (NIOSH 7402)	<input type="checkbox"/> TEM (AHERA)	<input type="checkbox"/> TEM (EPA Level II)	<input type="checkbox"/> Other
<input type="checkbox"/> Asbestos Bulk	<input type="checkbox"/> PLM (EPA/600/R-93/116)	<input type="checkbox"/> PLM (EPA Point Count)	<input type="checkbox"/> PLM (EPA Gravimetry)	<input type="checkbox"/> TEM BULK	
<input type="checkbox"/> Mold/Fungus	<input type="checkbox"/> Mold Air	<input type="checkbox"/> Mold Bulk	<input type="checkbox"/> Rotometer Calibration		
METALS	Det. Limit	Matrix	RCRA Metals	<input type="checkbox"/> All 8	Other Metals
<input type="checkbox"/> Total Metals	<input type="checkbox"/> FAA (ppm)	<input type="checkbox"/> Air Filter	<input type="checkbox"/> Arsenic (As)	<input type="checkbox"/> Chromium (Cr)	<input type="checkbox"/> All 3
<input type="checkbox"/> TCLP	<input type="checkbox"/> ICP (ppm)	<input type="checkbox"/> Drinking water	<input type="checkbox"/> Barium (Ba)	<input type="checkbox"/> Lead (Pb)	<input type="checkbox"/> Copper (Cu)
<input type="checkbox"/> Cr 6	<input type="checkbox"/> GFAA (ppb)	<input type="checkbox"/> Dust/wipe (Area)	<input type="checkbox"/> Cadmium (Cd)	<input type="checkbox"/> Mercury (Hg)	<input type="checkbox"/> Nickel (Ni)
<input checked="" type="checkbox"/> Other Types of Analysis	<input type="checkbox"/> Fiberglass	<input type="checkbox"/> Nuisance Dust	<input checked="" type="checkbox"/> Other (Specify) <u>EPA 8082A - PCB BULK</u>		
	<input type="checkbox"/> Silica	<input type="checkbox"/> Respirable Dust			

Condition of Package: ☐ Good ☐ Damaged (no spillage) ☐ Severe damage (spillage)

Seq. #	Lab ID	Client Sample Number	Comments	A/R
1		32219-10WG-26-DUPA	BLDG 10 - WEST ELEVATION GROUND	#26-1-2
2		" " - 26-DUPB	" " " "	#26-1-2
3		" " - 8	" " " "	#8-3-4
4		" " - 24-SPLITA	" " " "	#24-1-3
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

	Print Below	Sign Below	Company	Date	Time
Sampled by	DAVE LEONARD		NVL LABS	3-22-19	1000
Relinquished by	DAVE LEONARD		NVL LABS	3-22-19	1230
Received by	Emilia		NVL	3/22/19	1830
Analyzed by	Evelyn Abulu		NVL	3/22/19	14:00
Results Called by					
Results Faxed by					

Special Instructions: Unless requested in writing, all samples will be disposed of two (2) weeks after analysis.

 Results report to SANDSTONE
REQUEST RL < 1.0 PPM



Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

NVL Labs, Inc.
Marcus Gladden
4708 Aurora Ave. N.
Seattle, WA 98103

RE: Rainier Commons
Work Order Number: 1903329

March 25, 2019

Attention Marcus Gladden:

Fremont Analytical, Inc. received 1 sample(s) on 3/22/2019 for the analyses presented in the following report.

Polychlorinated Biphenyls (PCB) by EPA 8082
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

DoD/ELAP Certification #L17-135, ISO/IEC 17025:2005
ORELAP Certification: WA 100009-007 (NELAP Recognized)

Original

www.fremontanalytical.com

Page 1 of 10
RCLLC 0007002

CLIENT: NVL Labs, Inc.
Project: Rainier Commons
Work Order: 1903329

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1903329-001	32219-10WG-24-SPLIT B	03/22/2019 10:00 AM	03/22/2019 12:15 PM

CLIENT: NVL Labs, Inc.
Project: Rainier Commons

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Sample Cleanup Comments:

1903329-001A 322095 Acid: Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1903329-001A) required Acid Cleanup Procedure (Using Method No 3665A).

1903329-001A 322095 Florisil: Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1903329-001A) required Florisil Cleanup Procedure (Using Method No 3620C).

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1903329

Date Reported: 3/25/2019

Client: NVL Labs, Inc.

Collection Date: 3/22/2019 10:00:00 AM

Project: Rainier Commons

Lab ID: 1903329-001

Matrix: Solid

Client Sample ID: 32219-10WG-24-SPLIT B

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 23932

Analyst: IH

Aroclor 1016	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1221	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1232	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1242	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1248	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1254	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1260	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1262	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Aroclor 1268	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Total PCBs	ND	0.988		mg/Kg-dry	1	3/22/2019 5:12:53 PM
Surr: Decachlorobiphenyl	55.7	30.8 - 168		%Rec	1	3/22/2019 5:12:53 PM
Surr: Tetrachloro-m-xylene	69.8	30.3 - 157		%Rec	1	3/22/2019 5:12:53 PM

Sample Moisture (Percent Moisture)

Batch ID: R50250

Analyst: CO

Percent Moisture	0.792	0.500		wt%	1	3/25/2019 9:26:13 AM
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Work Order: 1903329
CLIENT: NVL Labs, Inc.
Project: Rainier Commons

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID	MB-23932	SampType: MBLK		Units: mg/Kg		Prep Date: 3/22/2019			RunNo: 50253		
Client ID:	MBLKS	Batch ID: 23932		Analysis Date: 3/22/2019			SeqNo: 986958				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	61.3		100.0		61.3	30.8	168				
Surr: Tetrachloro-m-xylene	70.9		100.0		70.9	30.3	157				

Sample ID	LCS1-23932	SampType: LCS		Units: mg/Kg		Prep Date: 3/22/2019		RunNo: 50253			
Client ID:	LCSS	Batch ID: 23932				Analysis Date: 3/22/2019		SeqNo: 986959			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	1.14	0.100	2.000	0	56.8	38.5	149				
Aroclor 1260	1.09	0.100	2.000	0	54.5	35.4	154				
Surr: Decachlorobiphenyl	66.7		100.0		66.7	30.8	168				
Surr: Tetrachloro-m-xylene	77.8		100.0		77.8	30.3	157				

Sample ID	LCS1D-23932	SampType: LCSD		Units: mg/Kg		Prep Date: 3/22/2019			RunNo: 50253		
Client ID:	LCSS02	Batch ID: 23932		Analysis Date: 3/22/2019			SeqNo: 986960				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	1.16	0.100	2.000	0	57.8	38.5	149	1.136	1.68	20	
Aroclor 1260	1.12	0.100	2.000	0	55.8	35.4	154	1.089	2.37	20	
Surr: Decachlorobiphenyl	69.1		100.0		69.1	30.8	168		0		
Surr: Tetrachloro-m-xylene	82.5		100.0		82.5	30.3	157		0		

Work Order: 1903329
CLIENT: NVL Labs, Inc.
Project: Rainier Commons

QC SUMMARY REPORT
Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID	LCS1D-23932	SampType:	LCSD	Units:	mg/Kg	Prep Date:	3/22/2019	RunNo:	50253			
Client ID:	LCSS02	Batch ID:	23932			Analysis Date:	3/22/2019	SeqNo:	986960			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	LCS2-23932	SampType: LCS			Units: mg/Kg		Prep Date: 3/22/2019			RunNo: 50253		
Client ID:	LCSS	Batch ID: 23932			Analysis Date: 3/22/2019			SeqNo: 986953				
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254		1.08	0.100	2.000	0	54.0	31.9	167				
Surr: Decachlorobiphenyl		62.8		100.0		62.8	30.8	168				
Surr: Tetrachloro-m-xylene		75.0		100.0		75.0	30.3	157				



Date: 3/25/2019

Work Order: 1903329
CLIENT: NVL Labs, Inc.
Project: Rainier Commons

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID	1903336-002ADUP			SampType:	DUP		Units:	wt%		Prep Date:	3/25/2019		RunNo:	50250	
Client ID:	BATCH			Batch ID:	R50250					Analysis Date:	3/25/2019		SeqNo:	986904	
Analyte		Result	RL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
Percent Moisture		15.4	0.500							13.51		13.1	20		

Sample ID	1903340-002ADUP	SampType:	DUP	Units:	wt%	Prep Date:	3/25/2019	RunNo:	50250		
Client ID:	BATCH	Batch ID:	R50250			Analysis Date:	3/25/2019	SeqNo:	986909		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	24.4	0.500						24.08	1.32	20	

Client Name: **NVL**

Work Order Number: **1903329**

Logged by: **Brianna Barnes**

Date Received: **3/22/2019 12:15:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☐ No ☒ NA ☐
- Bulk material.**
4. Shipping container/cooler in good condition? Yes ☒ No ☐
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
6. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒
7. Were all items received at a temperature of >0°C to 10.0°C * Yes ☐ No ☐ NA ☒
8. Sample(s) in proper container(s)? Yes ☒ No ☐
9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
10. Are samples properly preserved? Yes ☒ No ☐
11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
14. Does paperwork match bottle labels? Yes ☒ No ☐
15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
16. Is it clear what analyses were requested? Yes ☒ No ☐
17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	22.4

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Original



Fremont
Analytical

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/22/19 Page: 1 of 1

Laboratory Project No (internal): 1903329

Special Remarks:

Client: NVL LABS

Project Name: RAINIER COMMONS

Address: 4708 AURORA AVENUE

Project No: 2012-494

City, State, Zip: SEATTLE WA

Collected by: DAVE LEONARD

Telephone: 206-805-6412

Location: 3100 AIRPORT WAY S SEATTLE WA

Fax:

Report To (PM): MARCUS GLADDEN

PM Email: MARCUS.G@NVL LABS.COM

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCD)	Diesel/Heavy Oil Range Organics (D)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	ED8 (8011)	Comments
1 32219-10WG-24-SPLITB	3-22-19	1000	B								X						REQUEST RL < 1 PPM
2																	32219-10WG-24-1-3
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished x [Signature] Date/Time 3/22/19 12:15

Received x [Signature] Date/Time 3/22/19 12:15

Relinquished x [Signature] Date/Time

Received x [Signature] Date/Time

Turn-around Time:

☐ Standard

☐ 3 Day

☐ 2 Day

☒ Next Day

Same Day

(specify)